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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/423,004	01/31/2000	MATTI LINKO	2534-00053	6225

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EXAMINER

SHERRER, CURTIS EDWARD

ART UNIT PAPER NUMBER

1761

DATE MAILED: 01/13/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/423,004

Applicant(s)

LINKO ET AL.

Examiner

Curtis E. Sherrer

Art Unit

1761

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/29/02.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Again, claims 2 and 14 are indefinite because the scope of the phrase "chip like or stick like particles" is unknown.

Claims 15-17 and 22-24 are indefinite because the scope of the phrase "on the order of" is unknown.

Claim 21 is indefinite because it is not clear how it further defines over claim 1.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13, 14 and 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Ryu *et al.* (Journal: Eur. j. appl. microbiol. biotechnol., 1982, 15 (1) 1-8)(hereinafter Ryu).

The productivity of continuous ethanol fermentation has been increased using fixed bed reactors where a high density of yeast cells was maintained on a packing of wood chips. Two different systems have been used: first, a tubular reactor, which produced alcohol solutions containing up to 13.5% (V/V) ethanol and second, a multistage reactor where a better utilisation

of the reactor volume led to improved performances. Solutions containing 132 g/l of ethanol (16.5% V/V) were produced with a productivity increased up to 4.8 g/l.h. A better distribution of the active biomass and a lower gradient of alcohol concentration between support and bulk medium are possible reasons for this improvement. (Abstract) The tubular (column) reactor is built of a series of reactors, each containing a support grill. (Page 2).

Because the reactor is 50 mm wide (see pages 1-2), the chips therein must be at most 50 mm in their maximum dimension.

While Ryu does not specifically disclose the reactor being used for the production of beer (though beer production is mentioned in the Introduction), this is considered to be merely and intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pajunen et al. (U.S. Pat. No. 4,915,959)(hereinafter Pajunen) in view of Ryu.

Pajunen teaches a method of maturation or lagering of beer whereby the beer is matured after heating and cooling the beer, and then continuously treated in a column containing immobilized yeast to lower the diacetyl levels. (Abstract). While the patent broadly states the use of a carrier, the carrier of choice for the reaction column is a DEAE cellulose resin.” (Col. 3, lines 22-39). Pajunen teaches that “immobilized yeast cells are present in a cell density of about 10^5 to about 10^{10} yeast cells per gram of carrier” and this amount is considered to read on claim 7. (Col. 3, lines 29-33). The flow rate is taught to be the same as claimed in claim 8. (Col. 3, lines 36-38).

Ryu teaches that cited above. It would have been obvious to those of ordinary skill in the art to use the wood chips of Ryu in the process of Pajunen because they have long been known as yeast immobilization particles. The type of wood used by Ryu is not specified and it would have been obvious to those of ordinary skill in the art to use any wood that would provide a suitable immobilization surface.

As for the size of the particles, this is a notoriously well known result effective variable and, therefore, those of ordinary skill in the art would optimize the size so as to optimize the surface area versus the flow rate.

Ryu teaches the pretreatment of the wooden chips using carbon dioxide and ethylene oxide (page 2) and also discusses the influence that the flow rate has on the production of ethanol and thereby disclose that the flow rate is a result effective variable. It would have been obvious

to those of ordinary skill in the art to pretreat the chips by any well known means to sterilize the wood chips so as to prevent contamination.

Response to Arguments

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis E. Sherrer whose telephone number is 703-308-3847. The examiner can normally be reached on Tuesday-Friday, 8AM-6:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 703-308-3959. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3602 for regular communications and 703-305-3602 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

A handwritten signature in black ink, appearing to read 'Curtis E. Sherrer', written in a cursive style.

Curtis E. Sherrer
Primary Examiner
January 9, 2003